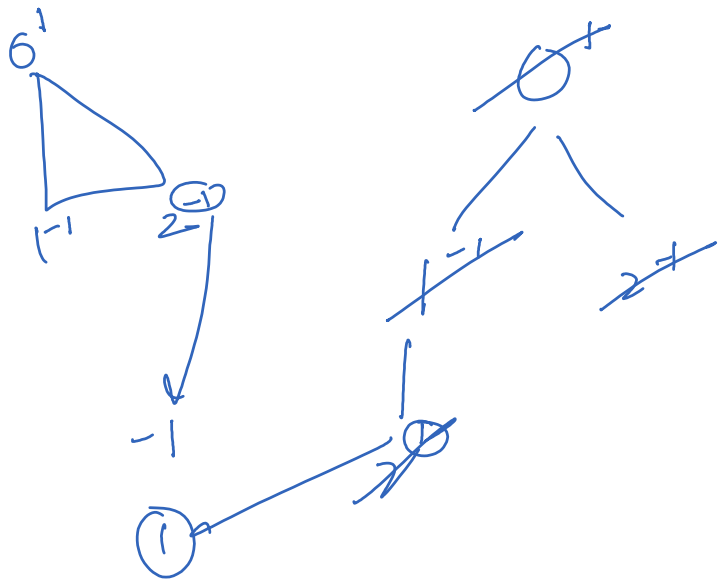
Tuesday, June 14, 2022 10:30 PM

```
queue.add(new Pair(v, 1));
while(queue.size() > 0){
    Pair rem = queue.remove();
    // m*
    if(visited[rem.v] != 0){
        int oc = visited[rem.v];
        int nc = rem.color;

        if(oc == nc){
            continue;
        } else {
            return false;
        }
    }
    visited[rem.v] = rem.color;

    for(int nbr: graph[rem.v]){
        if(visited[nbr] == 0){
            queue.add(new Pair(nbr, rem.color * -1));
        }
    }
}
```



a 1→2→3→4

b 2→5→6

3→7→8

c 4→9→10

d 5→11→12

e 4→12→13

f 6→12→14

g

h 7→15→16

i 8→17

j 9→19→20

k 10→11→21

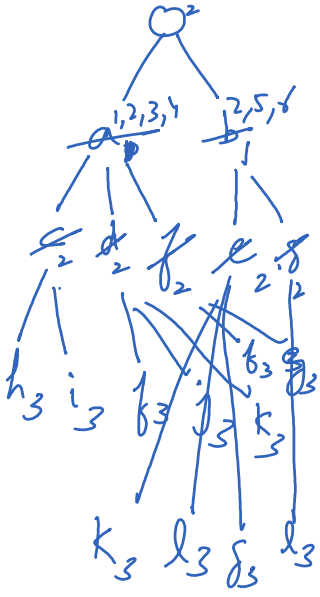
l 11→14→22

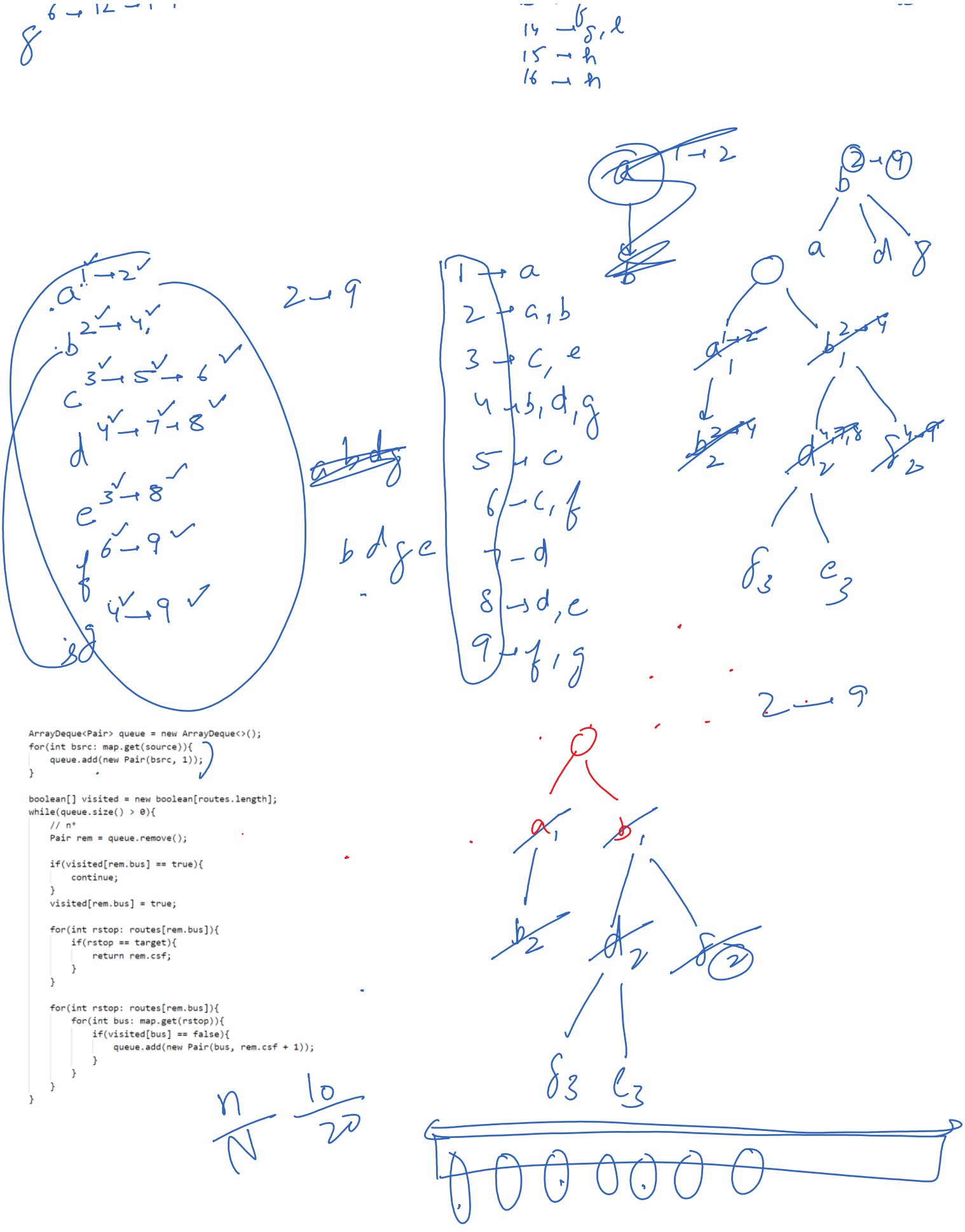
2→21

1→a
2→a,b
3→a,c
4→a,d,f
5→b,e
6→b,g
7→c,h
8→e,i
9→d,j
10→d,k
11→e,k,l
12→e,f,g
13→f
14→g,l
15→h

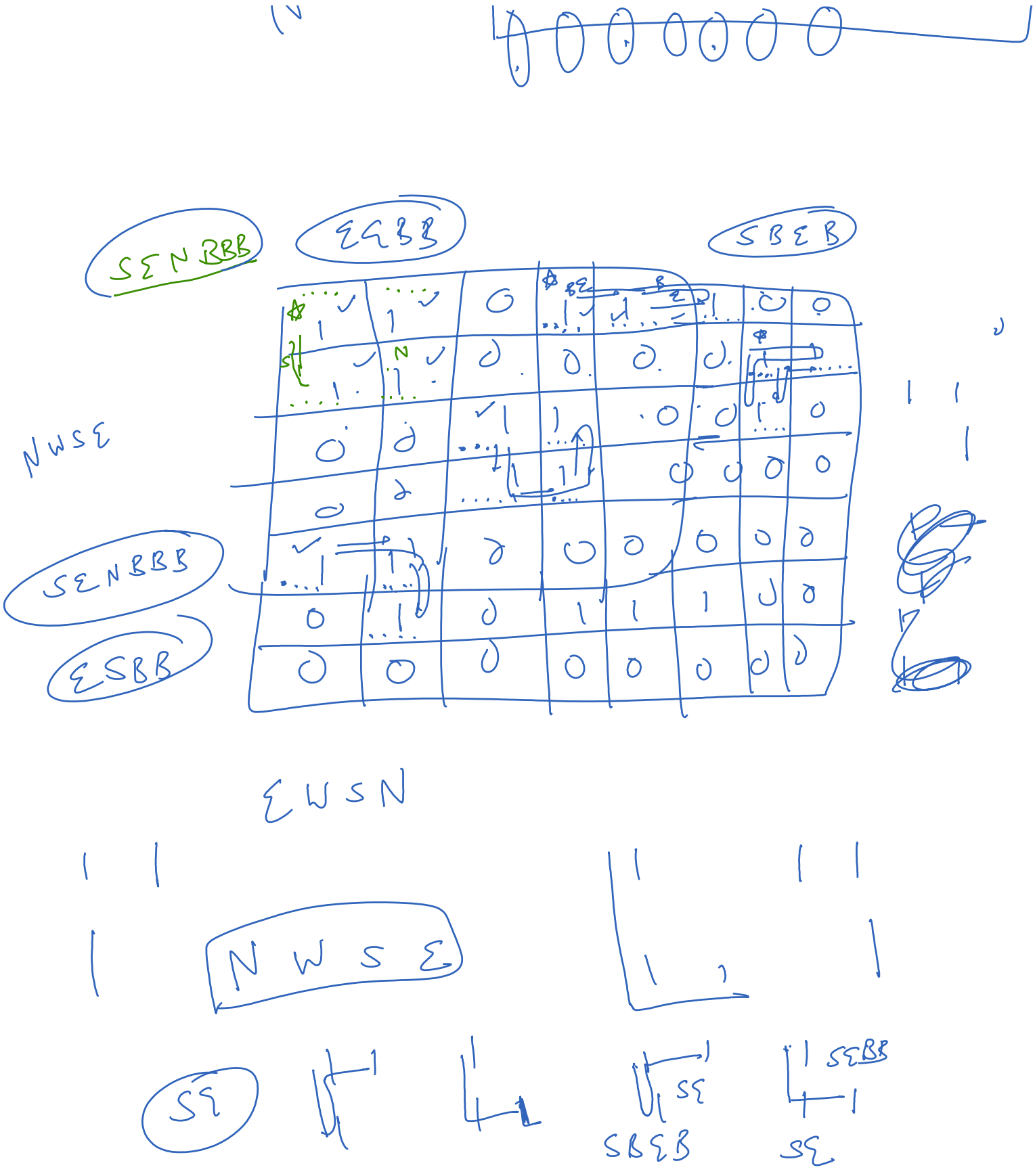
S→L of B

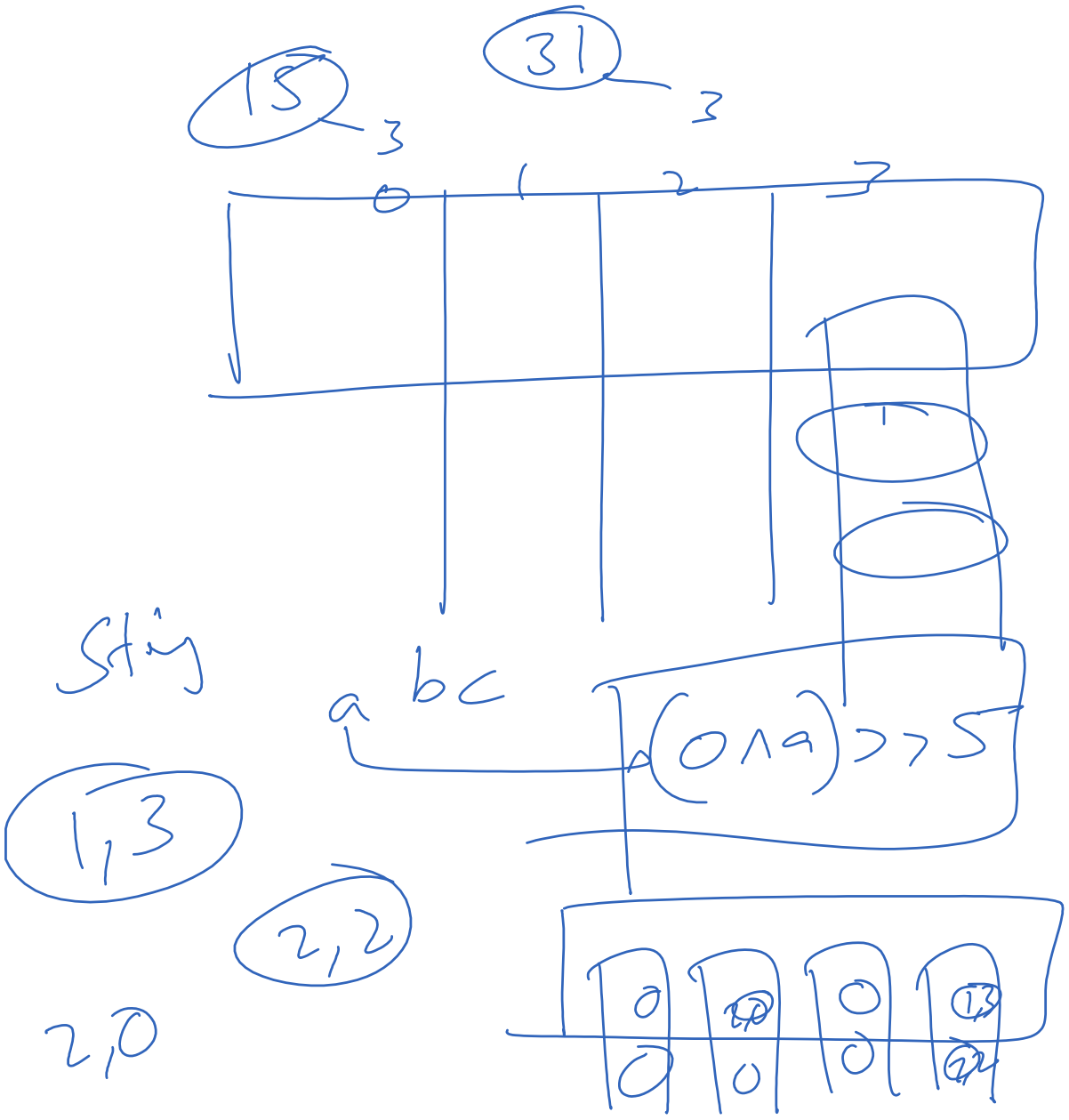
17→i
18→
19→j
20→j
21→k
22→l





```
ArrayDeque<Pair> queue = new ArrayDeque<>();
for(int bsrc: map.get(source)){
    queue.add(new Pair(bsrc, 1));
}

boolean[] visited = new boolean[routes.length];
while(queue.size() > 0){
    // n*
    Pair rem = queue.remove();

    if(visited[rem.bus] == true){
        continue;
    }
    visited[rem.bus] = true;

    for(int rstop: routes[rem.bus]){
        if(rstop == target){
            return rem.csf;
        }
    }

    for(int rstop: routes[rem.bus]){
        for(int bus: map.get(rstop)){
            if(visited[bus] == false){
                queue.add(new Pair(bus, rem.csf + 1));
            }
        }
    }
}
```


SENRBB
ESBB
SBEB
NWSE
SENBBB
ESBB
EWSN
NWSE
SE
SBEB
SE
SEBB
SE


31
3
15
3
0
1
2
3
1
String
a b c
(0^a)>>5
1,3
2,2
2,0
0
0
0
1,3
0
0
0
2,2